



55862-CIP

[Sequence Listing]

<110> Takeda Chemical Industries, Ltd.

<120> Novel G protein-coupled receptor protein, its DNA and ligand thereof

<130> 2568US0P-CIP

<150> US 09/831,758

<151> 2001-05-11

<150> PCT/JP99/06283

<151> 1999-11-11

<150> JP 10-323759

<151> 1998-11-13

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<151> 1999-03-08

<150> JP 11-106812

<151> 1999-04-14

<150> JP 11-166672

<151> 1999-06-14

<150> JP 11-221640

<151> 1999-08-04

<150> JP 11-259818

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<213> Human

<400> 1

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Ser Asn Leu His Ser Lys Glu Asn Tyr Asp Lys Tyr Ser Glu Pro Arg  
35 40 45  
Gly Tyr Pro Lys Gly Glu Arg Ser Leu Asn Phe Glu Glu Leu Lys Asp  
50 55 60  
Trp Gly Pro Lys Asn Val Ile Lys Met Ser Thr Pro Ala Val Asn Lys  
65 70 75 80  
Met Pro His Ser Phe Ala Asn Leu Pro Leu Arg Phe Gly Arg Asn Val  
85 90 95  
Gln Glu Glu Arg Ser Ala Gly Ala Thr Ala Asn Leu Pro Leu Arg Ser  
100 105 110  
Gly Arg Asn Met Glu Val Ser Leu Val Arg Arg Val Pro Asn Leu Pro  
115 120 125  
Gln Arg Phe Gly Arg Thr Thr Ala Lys Ser Val Cys Arg Met Leu  
130 135 140  
Ser Asp Leu Cys Gln Gly Ser Met His Ser Pro Cys Ala Asn Asp Leu  
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| acatcaaaca  | ttttttgtgc | agatgaatta  | gtgatgtcca | atcttcacag  | caaagaaaat  | 120 |
| tatgacaaat  | attctgagcc | tagaggatac  | ccaaaagggg | aaagaagcct  | caattttgag  | 180 |
| gaattaaaag  | attggggacc | aaaaaatgtt  | attaagatga | gtacacctgc  | agtcaataaa  | 240 |
| atgccacact  | ccttcgccaa | cttgccattg  | agatttgga  | ggaacgttca  | agaagaaaga  | 300 |
| agtgtctggag | caacagccaa | cctgcctctg  | agatctgga  | agaaatatgga | ggtgagcctc  | 360 |
| gtgagacgtg  | ttcctaacct | gccccaaagg  | tttgggagaa | caacaacagc  | caaaagtgtc  | 420 |
| tgcaggatgc  | tgagtgattt | gtgtcaagga  | tccatgcatt | caccatgtgc  | caatgactta  | 480 |
| ttttactcca  | tgacctgcca | gcaccaagaa  | atccagaatc | ccgatcaaaa  | acagtcaagg  | 540 |

&lt;210&gt; 3

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 3

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| gggctgcaca | tagagactta | atttttag | 27 |
|------------|------------|----------|----|

&lt;210&gt; 4

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 4

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&lt;210&gt; 5

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&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 5

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| gcacatagag | acttaatttt | agatttagac | 30 |
|------------|------------|------------|----|

&lt;210&gt; 6

&lt;211&gt; 27

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&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 6

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|------------|------------|---------|----|

&lt;210&gt; 7

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 7

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|------------|------------|---------|----|
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Ser Asn Leu His Ser Lys Glu Asn Tyr Asp Lys Tyr Ser Glu Pro Arg  
35 40 45  
Gly Tyr Pro Lys Gly Glu Arg Ser Leu Asn Phe Glu Glu Leu Lys Asp  
50 55 60  
Trp Gly Pro Lys Asn Val Ile Lys Met Ser Thr Pro Ala Val Asn Lys  
65 70 75 80  
Met Pro His Ser Phe Ala Asn Leu Pro Leu Arg Phe Gly Arg Asn Val  
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Gln Glu Glu Arg Ser Ala Gly Ala Thr Ala Asn Leu Pro Leu Arg Ser  
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115 120 125  
Gln Arg Phe Gly Arg Thr Thr Thr Ala Lys Ser Val Cys Arg Met Leu  
130 135 140  
Ser Asp Leu Cys Gln Gly Ser Met His Ser Pro Cys Ala Asn Asp Leu  
145 150 155 160  
Phe Tyr Ser Met Thr Cys Gln His Gln Glu Ile Gln Asn Pro Asp Gln  
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Lys Gln Glu Lys  
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tatgacaaat attctgagcc tagaggatac ccaaaagggg aaagaagcct caatttttgag 180  
gaattaaaag attggggacc aaaaaatgtt attaagatga gtacacctgc agtcaataaa 240  
atgccacact ccttcgccaa cttgccattg agatttgga ggaacgttca agaagaaaga 300  
agtgctggag caacagccaa cctgcctctg agatctggaa gaaatatgga ggtgagcctc 360  
gtgagacgtg ttcctaacct gccccaaagg tttgggagaa caacaacagc caaaagtgtc 420  
tgcaggatgc tgagtgattt gtgtcaagga tccatgcatt caccatgtgc caatgactta 480  
ttttactcca tgacctgcca gcaccaagaa atccagaatc ccgatcaaaa acagtcaagg 540  
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Pro Asn Leu Tyr Ser Lys Lys Asn Tyr Asp Lys Tyr Ser Glu Pro Arg  
35 40 45  
Gly Asp Leu Gly Trp Glu Lys Glu Arg Ser Leu Thr Phe Glu Glu Val  
50 55 60  
Lys Asp Trp Ala Pro Lys Ile Lys Met Asn Lys Pro Val Val Asn Lys  
65 70 75 80  
Met Pro Pro Ser Ala Ala Asn Leu Pro Leu Arg Phe Gly Arg Asn Met  
85 90 95  
Glu Glu Glu Arg Ser Thr Arg Ala Met Ala His Leu Pro Leu Arg Leu  
100 105 110  
Gly Lys Asn Arg Glu Asp Ser Leu Ser Arg Trp Val Pro Asn Leu Pro  
115 120 125  
Gln Arg Phe Gly Arg Thr Thr Thr Ala Lys Ser Ile Thr Lys Thr Leu  
130 135 140  
Ser Asn Leu Leu Gln Gln Ser Met His Ser Pro Thr Asn Gly Leu  
145 150 155 160  
Leu Tyr Ser Met Ala Cys Gln Pro Gln Glu Ile Gln Asn Pro Gly Gln  
165 170 175  
Lys Asn Leu Arg Arg Arg Gly Phe Gln Lys Ile Asp Asp Ala Glu Leu  
180 185 190  
Lys Gln Glu Lys  
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<210> 15  
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tatgacaaat attccgagcc tagaggagat ctaggctggg agaaagaaag aagtcttact 180

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&lt;210&gt; 16

&lt;211&gt; 27

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&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 16

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27

&lt;210&gt; 17

&lt;211&gt; 26

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; primer

&lt;400&gt; 17

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26

&lt;210&gt; 18

&lt;211&gt; 203

&lt;212&gt; PRT

&lt;213&gt; Rat

&lt;400&gt; 18

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Pro His Phe His Ser Lys Glu Gly Tyr Gly Lys Tyr Tyr Gln Leu Arg
 35      40      45
Gly Ile Pro Lys Gly Val Lys Glu Arg Ser Val Thr Phe Gln Glu Leu
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Lys Asp Trp Gly Ala Lys Lys Asp Ile Lys Met Ser Pro Ala Pro Ala
 65      70      75      80
Asn Lys Val Pro His Ser Ala Ala Asn Leu Pro Leu Arg Phe Gly Arg
 85      90      95
Asn Ile Glu Asp Arg Arg Ser Pro Arg Ala Arg Ala Asn Met Glu Ala
100      105      110
Gly Thr Met Ser His Phe Pro Ser Leu Pro Gln Arg Phe Gly Arg Thr
115      120      125
Thr Ala Arg Arg Ile Thr Lys Thr Leu Ala Gly Leu Pro Gln Lys Ser
130      135      140
Leu His Ser Leu Ala Ser Ser Glu Ser Leu Tyr Ala Met Thr Arg Gln
145      150      155      160
His Gln Glu Ile Gln Ser Pro Gly Gln Glu Gln Pro Arg Lys Arg Val
165      170      175
Phe Thr Glu Thr Asp Asp Ala Glu Arg Lys Gln Glu Lys Ile Gly Asn
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Leu Gln Pro Val Leu Gln Gly Ala Met Lys Leu
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&lt;211&gt; 609

&lt;212&gt; DNA

&lt;213&gt; Rat

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 agaagaagcc ccagggcacg ggccaacatg gaggcaggga ccatgagcca ttttcccagc 360  
 ctgccccaaa ggtttgggag aacaacagcc agacgcatca ccaagacact ggctggtttg 420  
 ccccagaaat ccctgcactc cctggcctcc agtgaatcgc tctatgccat gaccgcgag 480  
 catcaagaaa ttcagagtcc tgggtcaagag caacctagga aacgggtgtt cacgggaaaca 540  
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 <223> n means any of a, g, t or c.

<220>  
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 <222> 9  
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<220>  
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12

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 Pro His Phe His Ser Lys Glu Gly Asp Gly Lys Tyr Ser Gln Leu Arg  
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 Lys Asp Trp Gly Ala Lys Asn Val Ile Lys Met Ser Pro Ala Pro Ala  
 65 70 75 80  
 Asn Lys Val Pro His Ser Ala Ala Asn Leu Pro Leu Arg Phe Gly Arg  
 85 90 95  
 Thr Ile Asp Glu Lys Arg Ser Pro Ala Arg Val Asn Met Glu Ala  
 100 105 110  
 Gly Thr Arg Ser His Phe Pro Ser Leu Pro Gln Arg Phe Gly Arg Thr

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115 120 125  
 Thr Ala Arg Ser Pro Lys Thr Pro Ala Asp Leu Pro Gln Lys Pro Leu  
 130 135 140  
 His Ser Leu Gly Ser Ser Glu Leu Leu Tyr Val Met Ile Cys Gln His  
 145 150 155 160  
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 gacggaaaat actcccagct gagaggaatc ccaaaagggg aaaaggaaag aagtgtcagt 180  
 tttcaagaac taaaagattg gggggcaaag aatgttatta agatgagtcc agcccctgcc 240  
 aacaaagtgc ccactcagc agccaacctg cccctgagat ttggaaggac catagatgag 300  
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 ctgccccaaa ggtttgggag aacaacagcc agaagcccca agacaccgc tgatttgcca 420  
 cagaaacccc tgcactcact gggctccagc gagttgctct acgtcatgat ctgccagcac 480  
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 35 40 45  
 Ala Tyr Val Leu Ile Phe Leu Leu Cys Met Val Gly Asn Thr Leu Val  
 50 55 60  
 Cys Phe Ile Val Leu Lys Asn Arg His Met Arg Thr Val Thr Asn Met  
 65 70 75 80  
 Phe Ile Leu Asn Leu Ala Val Ser Asp Leu Leu Val Gly Ile Phe Cys  
 85 90 95  
 Met Pro Thr Thr Leu Val Asp Asn Leu Ile Thr Gly Trp Pro Phe Asp  
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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Ala | Thr | 100 | Cys | Lys | Met | Ser | Gly | 105 | Leu | Val | Gln | Gly | Met | 110 | Ser | Val | Ser |
|     |     | 115 |     |     |     |     |     | 120 |     |     |     |     |     | 125 |     |     |     |     |
| Ala | Ser | Val | Phe | Thr | Leu | Val | Ala | Ile | Ala | Val | Glu | Arg | Phe | Arg | Cys |     |     |     |
|     | 130 |     |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |     |     |
| Ile | Val | His | Pro | Phe | Arg | Glu | Lys | Leu | Thr | Leu | Arg | Lys | Ala | Leu | Phe |     |     |     |
|     | 145 |     |     |     | 150 |     |     |     |     |     | 155 |     |     |     | 160 |     |     |     |
| Thr | Ile | Ala | Val | Ile | Trp | Ala | Leu | Ala | Leu | Leu | Ile | Met | Cys | Pro | Ser |     |     |     |
|     |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |     |     |     |
| Ala | Val | Thr | Leu | Thr | Val | Thr | Arg | Glu | Glu | His | His | Phe | Met | Leu | Asp |     |     |     |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |     |     |
| Ala | Arg | Asn | Arg | Ser | Tyr | Pro | Leu | Tyr | Ser | Cys | Trp | Glu | Ala | Trp | Pro |     |     |     |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |     |     |
| Glu | Lys | Gly | Met | Arg | Lys | Val | Tyr | Thr | Ala | Val | Leu | Phe | Ala | His | Ile |     |     |     |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |     |     |     |
| Tyr | Leu | Val | Pro | Leu | Ala | Leu | Ile | Val | Val | Met | Tyr | Val | Arg | Ile | Ala |     |     |     |
|     | 225 |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |     |     |     |
| Arg | Lys | Leu | Cys | Gln | Ala | Pro | Gly | Pro | Ala | Arg | Asp | Thr | Glu | Glu | Ala |     |     |     |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |     |     |     |
| Val | Ala | Glu | Gly | Gly | Arg | Thr | Ser | Arg | Arg | Arg | Ala | Arg | Val | Val | His |     |     |     |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |     |     |     |
| Met | Leu | Val | Met | Val | Ala | Leu | Phe | Phe | Thr | Leu | Ser | Trp | Leu | Pro | Leu |     |     |     |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |     |     |     |
| Trp | Val | Leu | Leu | Leu | Ile | Asp | Tyr | Gly | Glu | Leu | Ser | Glu | Leu | Gln |     |     |     |     |
|     | 290 |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |     |     |     |     |
| Leu | His | Leu | Leu | Ser | Val | Tyr | Ala | Phe | Pro | Leu | Ala | His | Trp | Leu | Ala |     |     |     |
|     | 305 |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |     |     |     |
| Phe | Phe | His | Ser | Ser | Ala | Asn | Pro | Ile | Ile | Tyr | Gly | Tyr | Phe | Asn | Glu |     |     |     |
|     |     |     | 325 |     |     |     |     | 330 |     |     |     |     |     | 335 |     |     |     |     |
| Asn | Phe | Arg | Arg | Gly | Phe | Gln | Ala | Ala | Phe | Arg | Ala | Gln | Leu | Cys | Trp |     |     |     |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |     |     |     |
| Pro | Pro | Trp | Ala | Ala | His | Lys | Gln | Ala | Tyr | Ser | Glu | Arg | Pro | Asn | Arg |     |     |     |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |     |     |     |
| Leu | Leu | Arg | Arg | Arg | Val | Val | Asp | Val | Gln | Pro | Ser | Asp | Ser | Gly |     |     |     |     |
|     | 370 |     |     |     |     | 375 |     |     |     | 380 |     |     |     |     |     |     |     |     |
| Leu | Pro | Ser | Glu | Ser | Gly | Pro | Ser | Ser | Gly | Val | Pro | Gly | Pro | Gly | Arg |     |     |     |
|     | 385 |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |     |     |     |
| Leu | Pro | Leu | Arg | Asn | Gly | Arg | Val | Ala | His | Gln | Asp | Gly | Pro | Gly | Glu |     |     |     |
|     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |     |     |     |     |
| Gly | Pro | Gly | Cys | Asn | His | Met | Pro | Leu | Thr | Ile | Pro | Ala | Trp | Asn | Ile |     |     |     |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |     |     |     |

<210> 38  
 <211> 1299  
 <212> DNA  
 <213> Rat

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 ccggtggcag ccatgttcat cgcggcctac gtgctcatct tcctcctctg catggtgggc 180  
 aacaccctgg tctgcttcat tgtgctcaag aaccggcaca tgcgcactgt caccaacatg 240  
 tttatcctca acctggccgt cagcgacctg ctggtgggca tcttctgcat gccacaaacc 300  
 cttgtggaca acctatcac tggttggcct ttgacaacg ccacatgcaa gatgagcggc 360  
 ttggtgcagg gcatgtccgt gtctgcatcg gttttcacac tgggtggccat cgctgtggaa 420  
 aggttccgct gcatcgtgca ccctttccgc gagaagctga cccttcggaa ggcgctgttc 480  
 accatcgagg tgatctgggc tctggcgctg ctcatcatgt gtccctcggc ggtcactctg 540  
 acagtcaccc gagaggagca tcacttcatg ctggatgctc gtaaccgctc ctaccgctc 600  
 tactcgtgct gggaggcctg gcccgagaag ggcagtcgca aggtctacac cgcggtgctc 660  
 ttcgcgacac tctacctggt gccgctggcg ctcatcgtag tgatgtacgt gcgcatcgcg 720  
 cgcaagctat gccaggcccc cggtcctgcg cgcgacacgg aggaggcggg ggccgagggt 780  
 ggccgcactt cgcgcgctag ggcccgctgc ttgcacatgc tggctatggg ggcgctcttc 840  
 ttcacgttgt cctggctgcc actctgggtg ctgctgctgc tcatcgacta tggggagctg 900  
 agcgagctgc aactgcacct gctgtcggtc tacgccttcc ccttggcaca ctggctggcc 960  
 ttcttccaca gcagcgccaa ccccatcatc tacggctact tcaacgagaa cttccgcccg 1020  
 ggcttcagg ctgccttccg tgcacagctc tctggcctc cctgggccgc ccacaagcaa 1080  
 gcctactcgg agcggcccaa ccgcctcctg cgaggcgagg tgggtgggga cgtgcaaccc 1140  
 agcgactccg gcctgccatc agagtctggc cccagcagcg ggggtcccagg gcctggccgg 1200

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ctgccactgc gcaatgggcg tgtggcccat caggatggcc cgggggaagg gccaggctgc 1260  
aaccacatgc ccctcaccat cccggcctgg aacatttga 1299

<210> 39  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> the C-terminus of the polypeptide is amide (-CONH2) form

<400> 39  
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1 5 10

<210> 40  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> the C-terminus of the polypeptide is amide (-CONH2) form

<400> 40  
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1 5

<210> 41  
<211> 11  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> the C-terminus of the polypeptide is amide (-CONH2) form

<400> 41  
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<210> 42  
<211> 36  
<212> DNA  
<213> Human

<400> 42  
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<210> 43  
<211> 36  
<212> DNA  
<213> Human

<400> 43  
agtgtggag caacagccaa cctgcctctg agatct 36

<210> 44  
<211> 24  
<212> DNA  
<213> Human

<400> 44  
gttcctaacc tgccccaag gttt 24

<210> 45  
<211> 276  
<212> DNA  
<213> Human

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<400> 45  
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 acatcaaaca ttttttgtgc agatgaatta gtgatgtcca atcttcacag caaagaaaat 120  
 tatgacaaat attctgagcc tagaggatac ccaaaagggg aaagaagcct caattttgag 180  
 gaattaaaag attggggacc aaaaaatggtt attaagatga gtacacctgc agtcaataaa 240  
 atgccacact ccttcgccaa cttgccattg agattt 276

<210> 46  
 <211> 336  
 <212> DNA  
 <213> Human

<400> 46  
 atggaaatta tttcatcaaa actattcatt ttattgactt tagccacttc aagcttggtta 60  
 acatcaaaca ttttttgtgc agatgaatta gtgatgtcca atcttcacag caaagaaaat 120  
 tatgacaaat attctgagcc tagaggatac ccaaaagggg aaagaagcct caattttgag 180  
 gaattaaaag attggggacc aaaaaatggtt attaagatga gtacacctgc agtcaataaa 240  
 atgccacact ccttcgccaa cttgccattg agatttggga ggaacgttca agaagaaaga 300  
 agtgctggag caacagccaa cctgcctctg agatct 336

<210> 47  
 <211> 393  
 <212> DNA  
 <213> Human

<400> 47  
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 acatcaaaca ttttttgtgc agatgaatta gtgatgtcca atcttcacag caaagaaaat 120  
 tatgacaaat attctgagcc tagaggatac ccaaaagggg aaagaagcct caattttgag 180  
 gaattaaaag attggggacc aaaaaatggtt attaagatga gtacacctgc agtcaataaa 240  
 atgccacact ccttcgccaa cttgccattg agatttggga ggaacgttca agaagaaaga 300  
 agtgctggag caacagccaa cctgcctctg agatctgga agaaatatgga ggtgagcctc 360  
 gtgagacgtg ttcctaacct gccccaaagg ttt 393

<210> 48  
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 <212> DNA  
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<220>  
 <223> primer

<400> 48  
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<210> 49  
 <211> 26  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 49  
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<210> 50  
 <211> 203  
 <212> PRT  
 <213> Rat

<400> 50  
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 20 25 30  
 Pro His Phe His Ser Lys Glu Gly Tyr Gly Lys Tyr Tyr Gln Leu Arg  
 35 40 45

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Gly Ile Pro Lys Gly Val Lys Glu Arg Ser Val Thr Phe Gln Glu Leu  
 50 55 60  
 Lys Asp Trp Gly Ala Lys Lys Asp Ile Lys Met Ser Pro Ala Pro Ala  
 65 70 75 80  
 Asn Lys Val Pro His Ser Ala Ala Asn Leu Pro Leu Arg Phe Gly Arg  
 85 90 95  
 Asn Ile Glu Asp Arg Arg Ser Pro Arg Ala Arg Ala Asn Met Glu Ala  
 100 105 110  
 Gly Thr Met Ser His Phe Pro Ser Leu Pro Gln Arg Phe Gly Arg Thr  
 115 120 125  
 Thr Ala Arg Arg Ile Thr Lys Thr Leu Ala Gly Leu Pro Gln Lys Ser  
 130 135 140  
 Leu His Ser Leu Ala Ser Ser Glu Leu Leu Tyr Ala Met Thr Arg Gln  
 145 150 155 160  
 His Gln Glu Ile Gln Ser Pro Gly Gln Glu Gln Pro Arg Lys Arg Val  
 165 170 175  
 Phe Thr Glu Thr Asp Asp Ala Glu Arg Lys Gln Glu Lys Ile Gly Asn  
 180 185 190  
 Leu Gln Pro Val Leu Gln Gly Ala Met Lys Leu  
 195 200

<210> 51  
 <211> 609  
 <212> DNA  
 <213> Rat

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 acttcaaaca ccctttgttc agatgaatta atgatgcccc attttcacag caaagaaggt 120  
 tatggaaaat attaccagct gagaggaatc ccaaaaagggg taaaggaaag aagtgtcact 180  
 tttcaagaac tcaaagattg gggggcaaaag aaagatatta agatgagtcc agcccctgcc 240  
 aacaaagtgc cccactcagc agccaacctt cccctgaggt ttgggaggaa catagaagac 300  
 agaagaagcc ccagggcacg ggccaacatg gaggcagggg ccatgagcca ttttcccagc 360  
 ctgccccaaa ggtttgggag aacaacagcc agacgcatca ccaagacact ggctggtttg 420  
 ccccgaaat ccctgcactc cctggcctcc agtgaattgc tctatgccat gacccgccag 480  
 catcaagaaa ttcagagtcc tgggtcaagag caacctagga aacgggtgtt cacggaaaca 540  
 gatgatgcag aaaggaaaca agaaaaaata ggaaacctcc agccagtcct tcaaggggct 600  
 atgaagctg 609

<210> 52  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 52  
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27

<210> 53  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 53  
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27

<210> 54  
 <211> 430  
 <212> PRT  
 <213> Human

<400> 54  
 Met Glu Gly Glu Pro Ser Gln Pro Pro Asn Ser Ser Trp Pro Leu Ser

## 55862-CIP

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|
| 1   | Gln | Asn | Gly | Thr | 5   | Asn | Thr | Glu | Ala | Thr | 10  | Pro | Ala | Thr | Asn | Leu | 15 | Thr | Phe |
|     |     |     | 20  |     |     |     |     |     |     | 25  |     |     |     |     |     | 30  |    |     |     |
| Ser | Ser | Tyr | Tyr | Gln | His | Thr | Ser | Pro | Val | Ala | Ala | Met | Phe | Ile | Val |     |    |     |     |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     |     | 45  |     |     |     |    |     |     |
| Ala | Tyr | Ala | Leu | Ile | Phe | Leu | Leu | Cys | Met | Val | Gly | Asn | Thr | Leu | Val |     |    |     |     |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |     |    |     |     |
| Cys | Phe | Ile | Val | Leu | Lys | Asn | Arg | His | Met | His | Thr | Val | Thr | Asn | Met |     |    |     |     |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |     |    |     |     |
| Phe | Ile | Leu | Asn | Leu | Ala | Val | Ser | Asp | Leu | Leu | Val | Gly | Ile | Phe | Cys |     |    |     |     |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |     |    |     |     |
| Met | Pro | Thr | Thr | Leu | Val | Asp | Asn | Leu | Ile | Thr | Gly | Trp | Pro | Phe | Asp |     |    |     |     |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |     |    |     |     |
| Asn | Ala | Thr | Cys | Lys | Met | Ser | Gly | Leu | Val | Gln | Gly | Met | Ser | Val | Ser |     |    |     |     |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |     |    |     |     |
| Ala | Ser | Val | Phe | Thr | Leu | Val | Ala | Ile | Ala | Val | Glu | Arg | Phe | Arg | Cys |     |    |     |     |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |     |    |     |     |
| Ile | Val | His | Pro | Phe | Arg | Glu | Lys | Leu | Thr | Leu | Arg | Lys | Ala | Leu | Val |     |    |     |     |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |     |    |     |     |
| Thr | Ile | Ala | Val | Ile | Trp | Ala | Leu | Ala | Leu | Ile | Met | Cys | Pro | Ser |     |     |    |     |     |
|     |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |     |    |     |     |
| Ala | Val | Thr | Leu | Thr | Val | Thr | Arg | Glu | Glu | His | His | Phe | Met | Val | Asp |     |    |     |     |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |    |     |     |
| Ala | Arg | Asn | Arg | Ser | Tyr | Pro | Leu | Tyr | Ser | Cys | Trp | Glu | Ala | Trp | Pro |     |    |     |     |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |    |     |     |
| Glu | Lys | Gly | Met | Arg | Arg | Val | Tyr | Thr | Thr | Val | Leu | Phe | Ser | His | Ile |     |    |     |     |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |     |    |     |     |
| Tyr | Leu | Ala | Pro | Leu | Ala | Leu | Ile | Val | Val | Met | Tyr | Ala | Arg | Ile | Ala |     |    |     |     |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |     |    |     |     |
| Arg | Lys | Leu | Cys | Gln | Ala | Pro | Gly | Pro | Ala | Pro | Gly | Gly | Glu | Glu | Ala |     |    |     |     |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |     |    |     |     |
| Ala | Asp | Pro | Arg | Ala | Ser | Arg | Arg | Arg | Ala | Arg | Val | Val | His | Met | Leu |     |    |     |     |
|     |     |     | 260 |     |     |     |     |     | 265 |     |     |     |     | 270 |     |     |    |     |     |
| Val | Met | Val | Ala | Leu | Phe | Phe | Thr | Leu | Ser | Trp | Leu | Pro | Leu | Trp | Ala |     |    |     |     |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |     |    |     |     |
| Leu | Leu | Leu | Leu | Ile | Asp | Tyr | Gly | Gln | Leu | Ser | Ala | Pro | Gln | Leu | His |     |    |     |     |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |     |    |     |     |
| Leu | Val | Thr | Val | Tyr | Ala | Phe | Pro | Phe | Ala | His | Trp | Leu | Ala | Phe | Phe |     |    |     |     |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |     |    |     |     |
| Asn | Ser | Ser | Ala | Asn | Pro | Ile | Ile | Tyr | Gly | Tyr | Phe | Asn | Glu | Asn | Phe |     |    |     |     |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |     |    |     |     |
| Arg | Arg | Gly | Phe | Gln | Ala | Ala | Phe | Arg | Ala | Arg | Leu | Cys | Pro | Arg | Pro |     |    |     |     |
|     |     | 340 |     |     |     |     |     | 345 |     |     |     |     | 350 |     |     |     |    |     |     |
| Ser | Gly | Ser | His | Lys | Glu | Ala | Tyr | Ser | Glu | Arg | Pro | Gly | Gly | Leu | Leu |     |    |     |     |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |     |    |     |     |
| His | Arg | Arg | Val | Phe | Val | Val | Val | Arg | Pro | Ser | Asp | Ser | Gly | Leu | Pro |     |    |     |     |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |     |    |     |     |
| Ser | Glu | Ser | Gly | Pro | Ser | Gly | Ala | Pro | Arg | Pro | Gly | Arg | Leu | Pro |     |     |    |     |     |
| 385 |     |     |     |     | 390 |     |     |     | 395 |     |     |     |     | 400 |     |     |    |     |     |
| Leu | Arg | Asn | Gly | Arg | Val | Ala | His | His | Gly | Leu | Pro | Arg | Glu | Gly | Pro |     |    |     |     |
|     |     |     | 405 |     |     |     |     |     | 410 |     |     |     |     | 415 |     |     |    |     |     |
| Gly | Cys | Ser | His | Leu | Pro | Leu | Thr | Ile | Pro | Ala | Trp | Asp | Ile |     |     |     |    |     |     |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |     |    |     |     |

&lt;210&gt; 55

&lt;211&gt; 1290

&lt;212&gt; DNA

&lt;213&gt; Human

&lt;400&gt; 55

|            |             |             |             |            |             |     |
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| atggaggggg | agccctccca  | gcctcccaac  | agcagttggc  | ccctaagtca | gaatgggact  | 60  |
| aacactgagg | ccaccccggc  | tacaaacctc  | accttctcct  | cctactatca | gcacacctcc  | 120 |
| cctgtggcgg | ccatgttcat  | tgtggcctat  | gcgctcatct  | tcctgctctg | catgggtgggc | 180 |
| aacaccctgg | tctgtttcat  | cgtgctcaag  | aaccgggcaca | tgcatactgt | caccaacatg  | 240 |
| ttcatcctca | acctggctgt  | cagtgaacctg | ctgggtgggca | tcttctgcat | gcccaccacc  | 300 |
| cttgtggaca | acctcatcac  | tgggtggccc  | ttcgacaatg  | ccacatgcaa | gatgagcggc  | 360 |
| ttggtgcagg | gcattgtctgt | gtcggcttcc  | gttttcacac  | tggtggccat | tgctgtggaa  | 420 |
| aggttccgct | gcattcgtgca | ccctttccgc  | gagaagctga  | ccctgcggaa | ggcgctcgtc  | 480 |

## 55862-CIP

|            |             |             |             |             |            |      |
|------------|-------------|-------------|-------------|-------------|------------|------|
| accatcgccg | tcattctgggc | cctggcgctg  | ctcatcatgt  | gtccctcggc  | cgtcacgctg | 540  |
| accgtcaccc | gtgaggagca  | ccacttcatg  | gtggacgccc  | gcaaccgctc  | ctaccctctc | 600  |
| tactcctgct | gggaggcctg  | gcccagagaag | ggcatgcgca  | gggtctacac  | cactgtgctc | 660  |
| ttctcgcaca | tctacctggc  | gccgctggcg  | ctcatcgtgg  | tcattgtacgc | ccgcatcgcg | 720  |
| cgcaagctct | gccaggcccc  | gggcccggcc  | cccgggggcg  | aggaggctgc  | ggacccgcga | 780  |
| gcatcgcggc | gcagagcgcg  | cgtggtgcac  | atgctggtca  | tggtggcgct  | gttcttcacg | 840  |
| ctgtcctggc | tgccgctctg  | ggcgctgctg  | ctgctcatcg  | actacgggca  | gctcagcgcg | 900  |
| ccgcagctgc | acctggtcac  | cgtctacgcc  | ttcccccttcg | cgcactggct  | ggccttcttc | 960  |
| aacagcagcg | ccaaccccat  | catctacggc  | tacttcaacg  | agaacttccg  | ccgcggcttc | 1020 |
| caggccgcct | tccgcgcccc  | cctctgcccg  | cgcccgtcgg  | ggagccacaa  | ggaggcctac | 1080 |
| tccgagcggc | ccggcgggct  | tctgcacagg  | cgggtcttcg  | tggtggtgcg  | gcccagcgac | 1140 |
| tccgggctgc | cctctgagtc  | gggccctagc  | agtggggccc  | ccaggcccgg  | ccgcctcccg | 1200 |
| ctgcggaatg | ggcggtggc   | tcaccacggc  | ttgcccaggg  | aagggcctgg  | ctgctccac  | 1260 |
| ctgcccctca | ccattccagc  | ctgggatatc  |             |             |            | 1290 |

<210> 56  
 <211> 1290  
 <212> DNA  
 <213> Human

|            |            |             |             |             |            |      |
|------------|------------|-------------|-------------|-------------|------------|------|
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| aacactgagg | ccaccccggc | tacaaacctc  | accttctcct  | cctactatca  | gcacacctcc | 120  |
| cctgtggcgg | ccatgttcat | tgtggcctat  | gcgtcatct   | tcctgtctctg | catggtgggc | 180  |
| aacacccttg | tctgtttcat | cgtgctcaag  | aaccggcaca  | tgatactgt   | caccaacatg | 240  |
| ttcatcctca | acctggctgt | cagtgcctg   | ctggtgggca  | tcttctgcat  | gcccaccacc | 300  |
| cttgtggaca | acctcatcac | tgggtggccc  | ttcgacaatg  | ccacatgcaa  | gatgagcggc | 360  |
| ttggtgcagg | gcatgtctgt | gtcggcttcc  | gttttcacac  | tggtggccat  | tgctgtggaa | 420  |
| aggttccgct | gcatcgtgca | ccctttccgc  | gagaagctga  | ccctgcggaa  | ggcgctcgct | 480  |
| accatcgccc | tcattctggc | cctggcgctg  | ctcatcatgt  | gtccctcggc  | cgtcacgctg | 540  |
| accgtcaccc | gtgaggagca | ccacttcatg  | gtggacgccc  | gcaaccgctc  | ctaccgctc  | 600  |
| tactcctgct | gggaggcctg | gcccagagaag | ggcatgcgca  | gggtctacac  | cactgtgctc | 660  |
| ttctcgcaca | tctacctggc | gccgctggcg  | ctcatcgtgg  | tcattgtacgc | ccgcatcgcg | 720  |
| cgcaagctct | gccaggcccc | gggcccggcc  | cccggggcg   | aggaggctgc  | ggacccgcga | 780  |
| gcatcgcggc | gcagagcgcg | cgtggtgcac  | atgctggtca  | tggtggcgct  | gttcttcacg | 840  |
| ctgtcctggc | tgccgctctg | ggcgctgctg  | ctgctcatcg  | actacgggca  | gctcagcgcg | 900  |
| ccgcagctgc | acctggtcac | cgtctacgcc  | ttcccccttcg | cgcactggct  | ggccttcttc | 960  |
| aacagcagcg | ccaaccccat | catctacggc  | tacttcaacg  | agaacttccg  | ccgcggcttc | 1020 |
| caggccgcct | tccgcgcccc | cctctgcccc  | cgcccgtcgg  | ggagccacaa  | ggaggcctac | 1080 |
| tccgagcggc | ccggcgggct | tctgcacagg  | cgggtcttcg  | tggtggtgcg  | gcccagcgac | 1140 |
| tccgggctgc | cctctgagtc | gggccctagc  | agtggggccc  | ccaggcccgg  | ccgcctcccg | 1200 |
| ctgcggaatg | ggcggtggc  | tcaccacggc  | ttgcccaggg  | aagggcctgg  | ctgctccac  | 1260 |
| ctgcccctca | ccattccagc | ctgggatatc  |             |             |            | 1290 |

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 <213> Artificial Sequence

<220>  
 <223> primer

|            |            |            |   |  |  |    |
|------------|------------|------------|---|--|--|----|
| <400> 57   |            |            |   |  |  |    |
| gtcgacatgg | agggggagcc | ctcccagcct | c |  |  | 31 |

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|            |            |           |  |  |  |    |
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| actagttcag | atatcccagg | ctggaatgg |  |  |  | 29 |

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<400> 63

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Leu | Thr | Phe | Glu | Glu | Val | Lys | Asp | Xaa | Ala | Pro | Lys | Ile | Lys | Met |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Asn | Lys | Pro | Val |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     | 20  |     |     |     |     |     |     |     |     |     |     |     |     |

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Pro Gln Arg Phe  
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Leu Pro Leu Arg Phe  
1 5

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Asn Pro Phe Phe  
1